

**KEYS TO THE FLORA OF FLORIDA - 20,
NYSSA (NYSSACEAE)**

Daniel B. Ward

Department of Botany, University of Florida
Gainesville, Florida 32611, U.S.A.

ABSTRACT

Nyssa (Nyssaceae) is represented in Florida by four native species: *N. aquatica*, *N. biflora*, *N. ogeche* and *N. sylvatica*. *Nyssa biflora*, in turn, is represented by var. *biflora* and var. *ursina*. Var. *ursina* is endemic to Florida. The reported southern limit of *N. sylvatica* is corrected. The nomenclatural justification is given for use of *Nyssa aquatica* rather than *N. uniflora*. An amplified key is given to the Florida taxa. *Phytologia* 90(3): 318-323 (December, 2008).

KEY WORDS: *Nyssa*, Nyssaceae, Florida flora.

The genus *Nyssa* (Nyssaceae) is more fully represented in Florida than in any other area of North America. The morphology, ecology, and distribution of its few species, as well as their nomenclature, has received thoughtful, scholarly examination (R. H. Eyde, *Rhodora* 61: 209-218. 1959, a delightful discourse on the discovery and naming of the genus; E. West & L. E. Arnold, *Native Trees of Florida*. 1956; R. K. Godfrey & J. W. Wooten, *Aquatic and Wetland Plants*, vol. 2. 1981; R. K. Godfrey, *Trees, Shrubs, and Woody Vines*. 1988; R. E. Burckhalter, *Sida* 15: 323-342. 1992, a well-done revision). Even so, details overlooked or perhaps misunderstood by previous workers merit further comment.

It is useful where matters of taxonomic rank and nomenclature are to be discussed and where common names are stable, to establish a vernacular baseline: *Nyssa aquatica* L. is here called the Water Tupelo, *N. ogeche* Bartr. ex Marsh. the Ogeechee Lime, *N. sylvatica* Marsh. the Black Tupelo or Black Gum, and *N. biflora* Walt. the Swamp Tupelo with its endemic variety, the Dwarf Tupelo or Bear Gum.

The Black Tupelo, *Nyssa sylvatica*, has been treated as a species with one or two varieties (Godfrey, 1988; Wunderlin & Hansen, 2003), or as one of a complex of three distinct species (Clewell, 1985; Burckhalter, 1992). The closely related *N. biflora*, with basally enlarged trunks, is amply distinct when seen in its swamp habitat; but when trees with slender trunks are encountered in poorly drained but seasonally dry flatwoods, they often are identified as *N. sylvatica*. Conversely, trees of *N. sylvatica* on temporarily wet soil are sometimes called *N. biflora*. Confounding this distinction, trees of *N. sylvatica* in northern states occur both on well-drained upland soils and in low White Cedar (*Chamaecyparis thyoides*) swamps, a status never seen in Florida. Habitat thus gains an improper level of importance, overshadowing the obvious differences in leaf shape and flower/fruit numbers. Misidentifications abound.

These misidentifications have led to quite large errors in the range assigned to *Nyssa sylvatica*. E. L. Little (Atlas of United States Trees, map 144-E. 1971), a study largely compiled from herbarium records, extended the range to northern Collier County, in the southwestern peninsula. Burckhalter (1992) and Wunderlin & Hansen (2003), with greater caution, accepted a range to Manatee County, just south of Tampa Bay. In the present report, after years of field observation, no specimen of *N. sylvatica* has been verified south of Alachua County, in the north-central peninsula. All others are *Nyssa biflora*.

Other *Nyssa* in Florida also require range corrections. *Nyssa biflora* has been reported from Lignum Vitae Keys, far disjunct from its southern terminus in the central peninsula; the plant was identified correctly, but its apparent source was the central panhandle (Ward & F. C. Craighead, Sida 14: 287-304. 1990). A disjunct population of *Nyssa ogeche* in Hillsborough County (Burckhalter, 1992: 336) appears to be derived from introduced plants (Wunderlin & Hansen, 2003: 400).

Specific status for both *Nyssa sylvatica* and *N. biflora*, as employed here, is based on: mesic habitat (hydric northward, but not in Florida) vs. hydric; leaves broadly obovate with few irregular teeth

toward tip vs. leaves medium obovate with even margins; petiole and lower midrib usually bearing a few long, spreading hairs vs. petiole glabrous or with short appressed hairs. The character of petiole pubescence is distinctive when present (lost late in season) and seems not to have been noted previously.

Botanists consistently acknowledge the Black Tupelo, *Nyssa sylvatica*, to differ from the Swamp Tupelo, *N. biflora*, though sometimes only at varietal level. But the Dwarf Tupelo, *N. ursina*, has met with diverse views, either dismissed as an environmentally induced variant of *N. biflora* (Godfrey, 1988; Wunderlin & Hansen, 2003), or accepted at full specific rank (Clewell, 1985; Burckhalter, 1992). Godfrey, whose field familiarity with these plants was unequalled, was adamant (pers. comm., Dec 1989) that the stocky shrubs of the Apalachicola delta were fire-induced *N. biflora*. Burckhalter (1992), however, excellently pointed out their differences, agreeing with Small's original specific rank. The similarity of range of the Dwarf Tupelo to an array of wetland panhandle endemics suggests a genetic component. With Solomonian wisdom, Ward (Novon 11: 362. 2001) split the difference, giving it varietal status.

The name *Nyssa aquatica* has received attention from several skilled nomenclaturalists. Observant reviewers of northern floras will have noted that the Water Tupelo is consistently called *N. aquatica* L. in publications originating with, or influenced by, the Gray Herbarium, Harvard, while workers at the New York Botanical Garden since about 1945 have invariably used *N. uniflora* Wengen.

H. W. Rickett (N. Amer. Flora 28B: 313-316. 1945) pointed out, correctly, that a majority of Linnaeus' references under his *Nyssa aquatica* are to the Black Tupelo. Examination of Linnaeus' specimens (LINN microfiche) shows them also to be Black Tupelo, the present *N. sylvatica*. R. H. Eyde (Taxon 13: 129-132. 1964) discussed the "Typification of *Nyssa aquatica* L.," offering interpretations that would support (1) replacement of *N. sylvatica* by *N. aquatica*, (2) rejection of *N. aquatica* as a confused name, or (3) typification of *N. aquatica* by the one Linnaean reference that represents the Water Tupelo.

Interpretation (1) is supported by the evidence but is disruptive of the names of both the Water Tupelo and the Black Tupelo. Interpretation (2) is scarcely tenable since the confusion lies in the writings of early authors, not in Linnaeus' specimens. Interpretation (3), preferred by Eyde (pers. comm., Oct 1989), is contradicted by Linnaeus' specimens which Eyde did not address. Eyde thus came to no useful conclusion.

Neither Rickett (1945) nor Eyde (1964) called attention to a collateral consequence of employing *Nyssa aquatica* for the Black Tupelo. A second domino would also fall; the Water Tupelo, if *N. aquatica* were used elsewhere, would become *N. uniflora*.

In re-examination of this issue, J. L. Reveal (Phytologia 71:468-471. 1991) reviewed the references cited by Linnaeus. He then lectotypified *Nyssa aquatica* (as Eyde had failed to do) by a Clayton spm. (BM) of Water Tupelo that Linnaeus did not mention but perhaps had seen. Almost as an afterthought Reveal observed (as Eyde had not) that prior to 1753 Linnaeus also saw (and annotated as "*aquatica*") a Pehr Kalm spm. (1232.1, LINN) of the Black Tupelo, or *N. sylvatica*. This spm., as part of Linnaeus' own herbarium, clearly is an unequivocal basis for Linnaeus' new species, and it is unfortunate that authors in years past had not recognized its significance. Reveal did not well lay out his nomenclatural justification for designating the Clayton spm.; indeed, he obscured his strategy by providing detailed but unnecessary and distracting literature references. However, assuming his intent was to preserve *N. aquatica* and *N. sylvatica* in their customary usages, his procedure was sound. The Kalm spm. (LINN) is certainly part of the "original material" (I.C.B.N., Art. 9, Note 2) from which a lectotype must be designated. But the Clayton spm. (BM) may also be argued to be part of Linnaeus' "original material" and thus also available for lectotype designation; though very possibly never seen by Linnaeus, it was once owned by Gronovius, whose work (*Flora Virginica*, 1739) had been cited by Linnaeus. Reveal is to be chided for a devious (and perhaps dubious) interpretation of the Code, and to be commended for employing a stratagem that can preserve the familiar scientific names of the Water Tupelo and the Black Tupelo.

NYSSA L. Tupelos¹

1. Petioles mostly 3-6 cm. long; leaf blades ovate, acuminate-tipped, with margin entire or few- and shallowly-toothed; pistillate flowers solitary; fruits 1.5-3.0 cm. long, purple at maturity, on 2-3 cm. peduncles. Tree, to 30 m. Floodplain forests, swamps. Panhandle and northwest peninsula (s. to Levy County); infrequent. Spring. [*Nyssa uniflora* Wangenh.]
 WATER TUPELO. **Nyssa aquatica** L.

1. Petioles less than 2.5 cm. long.
2. Lower leaf surface grayish green, densely soft-pubescent; pistillate flowers solitary; fruits 2.0-3.5 cm. long, bright red (fading to dull orange) at maturity, on 0.5-1.0 cm. peduncles. Tree, to 30 m. River banks, bottomland woodlands. Panhandle and north Florida (s. to Dixie, Alachua counties); infrequent. Spring.
 OGEECHEE LIME, OGEECHEE TUPELO.

Nyssa ogeche Bartr. ex Marsh.

2. Lower leaf surface light green, glabrous to smooth-pubescent; pistillate flowers usually 2 or more; fruits \pm 1.0 cm. long, blue-black at maturity, on 1-3 cm. peduncles.
3. Leaves 8-15 cm. long, blades broadly obovate, some with a few coarse shallow teeth toward apex, petioles usually with a few long (1.0-1.5 mm.) spreading hairs; fruits borne in clusters of 4-5. Tree, to 20 m. Upland well-drained woodlands. Panhandle and north Florida (s. to Alachua County); infrequent. Spring.
 BLACK TUPELO, BLACK GUM.

Nyssa sylvatica Marsh.

3. Leaves 3-12 cm. long, blades elliptic to narrowly obovate, always entire, petioles glabrous or with short (0.2-0.5 mm.) appressed hairs; fruits borne singly or in pairs. Wetlands. Spring.
 SWAMP TUPELO. **Nyssa biflora** Walt.

- a. Tree, to 35 m., single-trunked; leaves 5-12 cm. long. Swamps (with trunks much enlarged at base), low pinelands. Panhandle and peninsula, south to Lake Okeechobee (Glades County); common.
SWAMP TUPELO (typical). var. **biflora**

- a. Shrub, to 5 m., much branched from base; leaves 3-6 cm. long. Marshes, low pinelands. Central coastal panhandle (Bay, Calhoun, Gulf, Liberty, Franklin, Wakulla counties); rare and local. Endemic. [*Nyssa ursina* Small] DWARF TUPELO, BEAR GUM.
var. **ursina** (Small) D. B. Ward

¹ This paper is a continuation of a series begun in 1977. The "amplified key" format employed here is designed to present in compact form the basic morphological framework of a conventional dichotomous key, as well as data on habitat, range, and frequency. Amplified keys are being prepared for all genera of the Florida vascular flora; the present series is restricted to genera where a new combination is required or a special situation merits extended discussion.